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The medical treatment of Maria, Dowager Empress of the Russian Empire: an analysis of her prescription book from 1807 and 1808

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This study analyzes the medicines that were used to treat the Dowager Russian Empress Maria, widow of Tsar Paul I, and describes the doctors who cared for her health in 1807 and 1808. The source for this research was the imperial court pharmacy prescription book 1807-1811. Hypotheses about the diseases and medical problems of the Empress and how treatment for her differed according to circumstances, particularly after the loss of her granddaughter Princess Elizabeth, have been made based on the prescriptions recorded in the book. The content of the prescriptions suggests that the Empress suffered from gastrointestinal tract disorders, skin and eye diseases, neuralgic pains and insomnia. Foreign physicians educated in European universities worked at the imperial court and implemented European medical traditions. They took high positions in the administration and the medical education system, and gradually spread their experience and modern knowledge to Tsarist Russian society.

1. Introduction

Physicians educated in European universities tended to the health of the members of the Imperial Russian family. They were invited because of their professional achievements and authority and also for their personal qualities—their moral values and ability to respect confidentiality (Nakhapetov 2007). Gradually the court doctors expanded their activities. They established medical training institutions and dealt with the public. At the beginning of the 19th century the tsarist court physicians had responsibilities in the civil and military service and academic institutions and therefore played an important role in spreading European medical knowledge in the Russian Empire. But their special task was care for the health of members of the Imperial family. Each member of the family had a number of personal physicians.

Three physicians tended to the health of Empress Maria Feodorovna (1759-1828). Maria was born Princess Sophie Marie Dorothee Auguste Louise of Württemberg. At her marriage to Paul in 1776—he was the son of Peter‘s grandson, Peter III of Schleswig-Holstein (1762) and Catherine II, “The Great,’’ (1761-1796), who reigned in his own right as Tsar Paul I, from 1796 to 1801—Sophie converted to the Orthodox faith and took the name Maria Feodorovna. Empress Maria was Paul‘s second wife; his first wife had died in childbirth. Maria gave birth to ten children, the most of all the Romanov dynasty women. Only one of her children died before reaching the age of maturity.

Maria was known not only as the wife of Emperor Paul, but as the mother of two succeeding emperors—Alexander I, who reigned from 1801 to 1825 and Nicholas I, who reigned from 1825 to 1855. She also was influential in the political, social, cultural, and educational life of the Russian Empire (Ostrovskii 2013). Major policy decisions were discussed at Pavlovsk, her primary residence, a neo-classical palace, designed by the Scottish architect Cameron. Maria‘s opinions were considered important.

Maria‘s focus was philanthropy. She established organizations concerned with women‘s education and the health and the care of orphans (Azernikova 2010). Empress Maria established the first hospital for the poor people in Russia—“Mariinskaya hospital” (1803). The hospital was donated privately by the Imperial Family. It still functions in St. Petersburg and currently is the oldest clinical hospital in Russia. Because of her example, charity work became a tradition for Romanov women.

Empress Maria’s life was fraught with losses. In 1801 her husband Tsar Paul was assassinated. In 1825 her eldest son Emperor Alexander I unexpectedly died. However, her biographers note that she surmounted these and other tragedies and was in relatively good health until her own death in 1828. For example, in 1789 after she gave birth to her tenth child doctors warned that another birth could be very dangerous. They attributed the risk to her wearing a corset that constricted her waist (Nakhapetov 2007). But obviously the physicians‘ fears were unfounded. A more minor problem was Maria‘s own complaint, cited in her diary, that she suffered from poor eyesight by 1825 (Onishchenko 2008).

A letter from one of Maria‘s sons, who reigned as Emperor Nicholas I from 1825 to 1855, to a brother, gives details about Maria‘s death. One of her physicians, Dr. Rühl had hoped that she would get better by taking the laxatives he prescribed. These did not help, however, so three days later another of Maria‘s physicians, Dr. Crichton, bled her. She did briefly improve. For fear of pneumonia the doctors applied a plaster on her back made of the Spanish flies *Emplastrum vesicatorium*. Nevertheless, sadly, according to the Emperor—”blood had filled her head“— and on the 5th of November 1828 the Empress died—probably from a stroke (Nakhapetov 2007).

The medical problems of the Imperial family members are scarce. They are alluded to in a few memoirs and medical texts. The most informative and objective sources of their illnesses and problems are derived from record books of prescriptions. Drugs and cosmetics for members of the imperial family were registered in separate books and prepared separately in the palace pharmacy. One of the most interesting and detailed sources of the medical problems of Dowager Empress Maria health comes from a unique source—her prescription book for the years 1807-1811. This study analyzes Empress Maria’s prescriptions only for the years 1807-1808 because, unfortunately, the handwriting for the later years is illegible. Empress Maria was 48-49 years old at that time.

2. Analysis of the source

Empress Maria’s prescription book is bound in green leather with gold trim. The title of the book is in French: ‘’*Pour sa majeste*

L'Imperatrice Maria anno 1807" ''For her Majesty Empress Maria". This inscription is in decorative frame. Successive years, 1808, 1809, and 1810 are stamped below (Fig. 1). Despite lack of notation on the cover, the book also contains recipes for drugs and cosmetics prescribed during 1811.

Fig. 1: Empress Maria's prescription book 1807-1811.

The prescription book consists of 90 pages, which are not numbered. Registration of the prescriptions began 7 January 1807. The last prescription for the Empress is dated 31 December 1811. In Empress Maria's prescription book 177 recipes were registered during 1807, and 310 during 1808. Drugs for the Empress were prepared every second or every third day. From seven to 54 recipes were recorded each month (see Table 1). In October 1807, no medicines were registered leading to the supposition that the Empress was not in St. Petersburg. During March 1808 39 recipes were recorded, during April, 31, and during May 54 recipes were listed. It seems that the Empress was ill at that time, because her doctors prescribed medicines almost daily. Her illness was undoubtedly connected with the death of her infant grandchild, the daughter of her son, the reigning Tsar Alexander I, in April 1808. From the amount of drugs prescribed for her, we can deduce that Dowager Empress Maria was distraught at this time.

Table 1: Number of medicines produced, 1807-1808

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1807	12	7	17	12	28	27	15	23	15		8	13	177
1808	24	12	39	31	54	23	18	21	27	18	14	29	310

Usually a single drug was registered for the Empress Maria each day, but sometimes two to four recipes were recorded. The first column gave the date of registration. The second listed ingredients in Latin. Instructions for usage were written in Latin, French or German; only one was written in the Russian language. Each recipe included the note that the drug was prescribed for her Majesty The Empress (*Pour S M. I. l'Imperatrice).* Finally, the doctor's name was written and underlined (Fig. 2). In other recipe books of the nineteenth century doctors' titles were noted: "*Ord. Dom. Dr. Med.*", i.e. "*Ordinatio dominus doctoris medicus*" "prescribed by mister doctor" (Gudienė and Šimaitienė 2014), or "*Doctoris Medicus Prof.*" (Archives 1801-1802). However, in the document we analyze, only the doctor's name is recorded, without noting his degrees.

Pharmacists copied doctors' prescriptions in the registration book or indicated that previously prescribed medicines were being prescribed again. In the latter case they specified the date of the repeated recipe but did not rewrite its contents, Rather they usually noted only the form of the drug, such as "*mixture laxantes*", "*Infusum rhei*" etc. In 1807 directions to repeat previously produced drugs accounted for 39% of prescriptions although in 1808 they accounted for 51.3%.

The quantity of each component was expressed in ancient pharmaceutical measurements, such as grains, ounces, drachms. Spirit and opium solutions (*Laudanum liquidum*) or spirit and ether solutions were usually prescribed in drops with the Latin word *gutta* (drop) or the abbreviation *gtt* and Roman numerals indicating the number of drops. The prescription book also described methods of drug preparation, as, for example, instructions to dissolve an amount of *nitri puri* powder in rose water ("*Nitri depurati solve in aq. Rosar.*"). Recipes ended with abbreviations "*m. d. S.*": *misce* (mix), *da* (*datur*) (give), *signa* (mark). Recipes of pills included the note "*m. f. Pill. No. 10*", i.e. "*misce fiat pilulae*" "mix to have 10 pills".

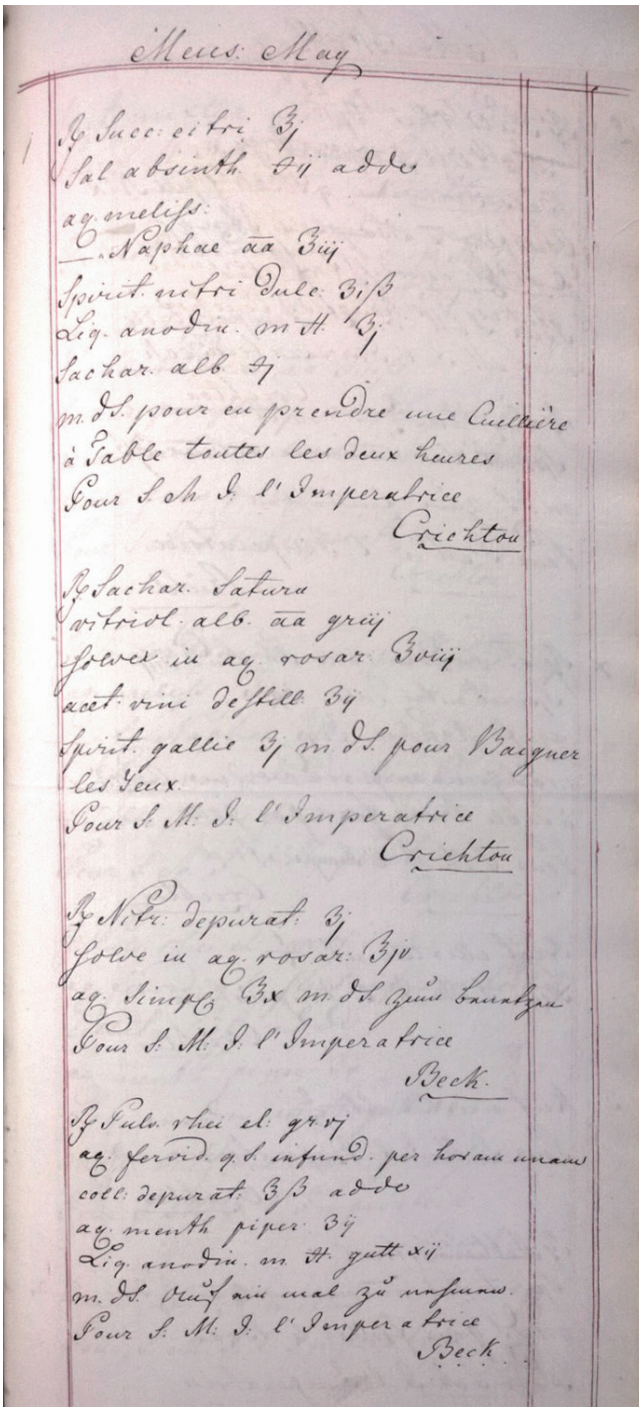
From the handwriting in the prescription book it appears that two pharmacists registered the medicines prescribed for Empress Maria.

3. Physicians

The physicians who attended Empress Maria had trained at major medical universities. Doctor Alexander Crichton (Крейтон) from Edinburgh, studied in Vienna, Leiden and German universities and practiced at Westminster hospital in London. His knowledge of Russian was probably meager and, indeed, he returned to Britain in 1819. His most famous work, though, on mental derangement and mind-body interaction, was published in 1798. Doctor Johann Beck (Бек) and Doctor Johann Rühl (Рюль) were both born in Riga, which had a long German tradition due to the founding of the Livonian Order there in the thirteenth century. Riga, a port in the southwest corner of Livonia, became a Russian city when Peter the Great incorporated Livonia and neighboring Estland (contemporary Latvia and Estonia) into the Russian Empire through the Peace of Nystadt in 1721 that ended his long war with Sweden. The Livonian Order was secularized at the time of the Reformation and the members of the Order established families. These Baltic German families, as they were known, dominated the indigenous Baltic-speaking inhabitants of Livonia and the Finnish-speaking inhabitants of Estland and also played a major role in the Russian government from the eighteenth century through the early twentieth century. Knowledge of German on the part of doctors Beck and Rühl undoubtedly was comforting to Empress Maria, who had come from the German principality of Württemberg to marry Paul. However, while both doctors had studied in German universities, they also served as Russian army doctors and undoubtedly were fluent in Russian.

Court physicians were able to take government or academic posts in addition to attending to the imperial family. Serving the imperial family, however, was their main job. Their remuneration consisted of an annual salary supplemented with funds for housing, food and other expenses. At the end of their contract at court, they received permanent payments and their family members received temporary ones. In addition, if treatment of their imperial patients was successful, they were awarded lavish gifts.

These and other details were described in the memoirs of Doctor Joseph Frank (1771-1842), whose father Johann Peter Frank (1745-1821) served as the personal physician of Emperor Alexander's wife, the reigning Empress Elisabeth. According to the author, in 1805 Johann Peter Frank signed an agreement with the Interior Minister that his annual salary would be 12,133 rubles: 4,000 rubles for the treatment of her Majesty, 2,920 rubles for food, and 2,113 rubles for horses. In addition, Frank became the Rector of the Imperial Medical-Surgical Academy in St. Petersburg with a salary of 600 rubles ─ several times lower than for treating Elizabeth. Finally, he was the head of a clinic and got 2,500 rubles for this job (Frankas 2001). Johann Peter Frank received a diamond-studded tobacco box when the infant daughter of Tsar Alexander and Empress Elizabeth, also called Elizabeth, recovered from some illness. When baby Elizabeth was vaccinated against smallpox he received a ring, worth 600 rubles. Of this last event, Johann Peter Frank wrote: "It is very wise to accustom the members of the Emperor's family to royal generosity from their infancy." (Frankas 2001).


Mens. May
1 Rp Succ: citri ℥j
Sal absinth. ʒij addo
aq. meliss:
C. Naphae aa ℥iij
Spirit. nitri Dulc. ʒiß
Liq. anodin. m H. ʒj
Sachar. alb ʒj
m d S. pour en prendre une Cuillère
à Table toutes les deux heures
Pour S. M. I. l'Imperatrice
Crichton

Rp Sachar. Saturn
vitriol. alb. aa gr ij
solve in aq. rosar. ℥vij
acet. vini destill. ʒij
Spirit. gallic ʒj m d S. pour Baigner
les Yeux.
Pour S. M. I. l'Imperatrice
Crichton

Rp Nitr. depurat. ʒj
solve in aq. rosar. ℥iv
aq. simpl. ℥x m d S. zum trinken
Pour S. M. I. l'Imperatrice
Beck

Rp Puly. rhei el. gr vj
aq. fervid. q. s. infund. per horam unam
coll. depurat. ℥ß addo
aq. menth. piper. ʒij
Liq. anodin. m H. gutt xij
m. d S. auf ein mal zu nehmen.
Pour S. M. I. l'Imperatrice
Beck

Fig. 2: Fragment from the prescription book, 1 May 1808.

In 1806 Joseph Frank met a few times with Dowager Empress Maria. His impressions were the following: "The Empress is still beautiful and majestic, with deep décolleté and several rows of large pearls on her chest ..." (Frankas 2001). Joseph Frank mentions that the Empress Maria invited him to lunch and wanted to introduce her three doctors (Frankas 2001). However, this meeting did not occur and Frank does not describe the physicians, who as noted, were Alexander Crichton (1763-1856), then 44 years old (Wallace and Gach 2008)[1], Johann Beck (1735-1811), then 72 (Bogdanov 2014)[2], and thirty-eight-year old Johann Georg Rühl (1769-1846) (Bogdanov 2014) (Brennsohn 1905)[3].

These men were not only experienced clinicians and surgeons, who had gained practical experience in military service, but also scholarly authors and developers of new medical ideas. Besides other merits, Johann Beck promoted ''a magic bullet'', advertising in *Sankt Peterburg vedomosti* 27 March 1803 that he had purchased a secret prescription for a medicine against worms (Bogdanov 2014). In 1798 Alexander Crichton published several volumes of a book in which he described a condition similar to the inattentive subtype of Attention Deficit Hyperactivity Disorder (Crichton 1798). Johann Rühl is known in the history of neonatology for suggesting, in 1835, the use of an innovative double-walled metal incubator at the Imperial Foundling Hospital (Cone 1981). He is also famous as a reformer of the treatment for mental patients in imperial Russia (Nakhapetov 2007) .

Beck served the imperial family from 1773. He first became the personal surgeon of twenty-year-old Paul, son of Catherine the Great and heir to the throne. After Paul became Emperor, upon the death of Catherine the Great in 1796, Beck continued to serve

1 Sir Alexander Crichton (02/12/1763 Edinburg – 04 /06/1856 Groves, near Sevenoaks). Acquired his medical degree in Leyden (Holland), with a thesis "*De vermibus intestinorum* ". He undertook a four-year tour visiting Stuttgart, Vienna, Halle, Berlin, Gottingen, returning to London in 1789. In 1794 he was elected physician to Westminster Hospital. While serving as personal physician to the Duke of Cambridge, he met Tsar Alexander I, who invited him to St. Peterburg. There Crichton was the head of the Civilian Medical Department, imperial counselor, and physician at the General Staff. He was the co-author of "*Pharmacopoeia pauperum*" and helped to edit the "*Russische Sammlung für Naturwissenschaften*" (1815). He returned to England in 1819, and was knighted by King George IV.
He published works of medicine and geology. His most famous work – a two–volume medical book "*An inquiry into the nature and origin of mental derangement: comprehending a concise system of the physiology and pathology of the human mind and a history of the passions and their effects*" (1798).

2 Johann Beck (20/05/1735, Riga—02/09/1811, Martyškino between Oranienbaum and Sankt Peterburg). Studied medicine in Kiel and Berlin. Came to St. Petersburg in 1755 and served at the military hospital in that city. He served as an army doctor and as leib-surgeon (personal surgeon) to Grand Duke Paul Petrovich (1773). He received his Doctor of Medicine degree from Frankfurt-on-Oder in 1781 with a dissertation entitled: "*De bubonicle bipartite in carcerata kelotomiafeliciter cugata*" (About two-sided hernia "*pakhovoi gryzhe*" successfully cured by means of Kelotomii). Privy Councillor "*Tainyi sovetnik*".

3 Johann Georg Rühl (20/05/1769 Riga —17/09/1846 St. Petersburg). Son of the famous Baltic County doctor "*Baltische Kreis Arzt*" Friedrich Ludwig Rühl. Studied medicine and surgery at St. Petersburg University, then in Erfurt. He received his Doctor of Medicine degree at Erfurt University in 1792 with a dissertation entitled: "*Diss. de usu medicamentorum antimonialium in febribus intermittentibus*" (Dissertation on the use of antimonial medicines with intermittant fevers). He served in the navy then in hospitals in Moscow and St. Petersburg. From 1794 he was a doctor in the Preobrazhenskii Guards' Regiment then hof surgeon (1798). He was leibmedik (personal physician) to Mariia Fedorovna from 1807. After her death, he became the inspector of 26 imperial health institutions. He was senior physician "*glavnyi dokt*." of the Hospital of All Sorrows. In 1837 he was honored for 50 years of service. He was made State Councilor. He is buried in the Lutheran Cemetery in St. Petersburg.

him and his wife, now Empress Maria. He delivered their first son, the future Tsar Alexander I. Beck obviously earned the imperial family's trust for even at the age of 72 he still tended Maria, now Dowager Empress. Because the elderly doctor's own health began to decline, in 1807 young Doctor Rühl was invited to work (Bogdanov 2014). However, during the first year he prescribed only a few medicines for the Empress, no doubt needing more familiarity with the state of Maria's health and observation of her other physicians' work.

Chronic illness or the death of imperial patients could ruin court doctors' careers. Thus, they had to be readily accessible and, in critical situations, they lived in the palace and were constantly on duty. Additionally, court physicians were cautious about prescribing medications that might cause harm or discomfort. They often blamed each other for ineffective therapies and competed with each other for their patient's grace.

On the other hand, imperial physicians consulted with each other, particularly in serious cases. During the illness of Princess Elizabeth, Emperor Alexander I asked Doctor Crichton to help family doctor Johann Peter Frank (Frankas 2001). Although Doctor Frank suspected there was brain damage, both Crichton and Frank diagnosed that the little patient had a high fever and was suffering teething pain. Crichton proposed to cut the gums. Unfortunately, Elizabeth died, likely from meningitis, causing great grief to the entire palace and her doctors (Frankas 2001).

This sad event did not adversely affect the imperial physicians at the court of Alexander I. For their service to the imperial family and for their other merits doctors Crichton, Beck and Rühl received awards and testimonials. They held high positions in the health service and belonged to various societies.

Although Doctor Crichton was the personal physician of Emperor Alexander I and his wife Elizabeth, from 1804 to 1819, he also prescribed most of recipes in Dowager Empress Maria's prescription book. Doctor Beck ordered 167 prescriptions, but these included only five different medications according to content. He constantly prescribed three drugs: 1) laxative pills containing ox gall *Fel Tauri*, 2) a mixture of rhubarb and drops of ether, and 3) a clyster containing potassium nitrate and rose water. He prescribed an ointment with camphor and opium four times and a recipe for good digestion once. In sum, Dr. Beck dispensed a lot of drugs, but they usually were the same and, although he visited Dowager Empress Maria constantly, there is no doubt that Dr. Crichton bore the main responsibility for her health. Nevertheless, we can assume that the doctors discussed all the medications prepared for the Empress as a team.

A few other doctors are mentioned in Maria's prescription book. In March of 1807 a Doctor Einbrodl prescribed strong-acting dermatological medicines for Maria. Other doctors mentioned in the recipe book were Bloch and Saucerotte. The latter physician prescribed only one recipe. Doctor's Bloch prescription was the only one which had a Russian postscript indicating use of the medicine; all other prescriptions were in Latin, French and German.

During 1807, 49% of Maria's medications were prescribed by Doctor Beck and 34% by Doctor Crichton; Doctor Rühl wrote only two recipes. The next year the situation was reversed. Dowager Empress Maria was treated mostly by Doctor Chrichton as 47% of her medications were prescribed by him. Doctor Beck's prescriptions decreased to 26% and young Doctor Rühl's prescriptions increased to 24%. Doctor Bloch also prescribed a few recipes over the year (see Tables 2 and 3). Pharmacists registered these recipes in the languages in which they were prescribed: Doctor Beck's were in German and Doctor Crichton's in French.

Table 2: Prescriptions from each doctor of the Empress Maria in 1807

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	in all
Beck	9	7	7	9	10	12	10	10	5		4	4	87
Crichton	2		5	2	18	15	3	4	2		3	6	60
Rühl												2	2
Bloch	1							8	7				16
Einbrodl			5	1									6
Not indicated							2	1	1		1	1	6
In all	12	7	17	12	28	27	15	23	15		8	13	177

Table 3: Prescriptions from each doctor in 1808

Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	in all
Beck	11	5	11	10	14	7	5	5	5	1	2	4	80
Crichton	9	6	23	19	28	14	7	9	8	4	4	15	146
Rühl	3	1	2	2	12	1	6	7	11	12	8	10	75
Bloch						1			3				4
Einbrodl													
Not indicated	1		2							1			4
Sau-cerotte			1										1
In all	24	12	39	31	54	23	18	21	27	18	14	29	310

4. Composition of drugs

Maria's medicines usually contained more than one component. The therapeutic effects thus were synergistic. *Corrigents* or correctives were added to improve the smell and taste of drugs and to provide the necessary consistency.

Only a few single-component medicines are registered in Maria's prescription book and even these were usually composites, previously prepared. For example, honey of rose ─*Mel Rosae* was made of red rose powder, clarified honey and diluted alcohol. *Unguentum Nervini* was made of a wormwood herb (*Herbae Absinthii*), diluted spirit (*Spiritus Vini diluti*), lard (*Adeps suilli*), wax (*Cera flava)*, laurel berry oil (*Oleum Lauri fructus*), juniper oil (*Oleum Juniperi),* mint oil (*Oleum Menthae crispae*), rosemary oil (*Oleum Rosmarini*), and lavender oil (*Oleum Lavandulae)* (Hager 1893).

The most commonly prescribed medicines included four or five components. Some drugs consisted of seven to ten components.

The c*orrigents* for the active substances in external medicines mostly contained rose water, orange flower oil, almond oil, lavender oil and lavender flowers alcoholic extract. Internal medicines often included mint, cinnamon water, orange peel or flowers, water and other substances. Medicines produced for the Empress were richer in comparison with medicines administered to patients from lower social classes. For example, in 1830, at the Telšiai pharmacy in Kovno (Kaunas) province of the Russian Empire, drugs made of four and five components accounted for 22% of prescriptions, drugs from two or three components comprised 43% of prescriptions, and single-component drugs amounted to a third of prescriptions (Gudienė and Šimaitienė 2014). Analysis of the prescriptions of city residents revealed that patients from higher social strata were given more expensive drugs, consisting of more components, flavored and complemented by exotic, expensive materials. Ordinary citizens got mixtures of plants (*Species*) and they had to prepare the medicines themselves.

Maria's medicines consisted of low doses of fresh materials, prepared in the imperial pharmacy. In addition to medicines, cosmetics and perfumes were prescribed for her. Such external products amounted to about 43% (200 external preparations in all) of recipes in her prescription book. They included clysters (84 recipes), ointments, rinsing fluids, and perfume. Internal medicines amounted to 57% of the recipes: they included various mixtures and infusions (241 recipes) and pills (20 recipes). Internal

drugs prescribed for the Empress Maria were mainly composed of herbal ingredients. External medicines contained more chemicals. Doctors did not prescribe plasters for Maria during 1807 and 1808 although this form of drugs was common at the time. For example, *Emplastrum vesicatorium* was especially popular (Gudienė and Šimaitienė 2014). Powder of Spanish flies was mixed with the respective base of adhesive, and then the contents were spread on a linen fabric. This plaster had an irritating effect; it was applied to areas where there was pain, such as the abdomen, chest, or behind the ear. It also was prescribed for headache, inflammations, and cough (Hager 1887).

4.1. Components of botanical origin

The majority of the plants mentioned in the registration book were expensive imported raw materials. The most expensive component was opium. One drachma (3.9 grams) of this powder cost 0.80 rubles in 1825, while one ounce (31.1 grams) of *Tinctura Valerianae,* syrup of orange peels (*Sirupus Aurantii Corticis),* tinctura of ginger (*Tinctura Zingiberis)* and most commonly prescribed item, rhubarb root powder (*Radix Rhei pulverisata*) cost about 30 kopeks (Aptekarskaja taksa 1826).

In total, 35 plants are mentioned in Maria's recipe book for the years 1807 and 1808. Rhubarb root powder was prescribed in 113 (25%) of recipes. Peppermint water (*Aqua Menthae piperitae)* and rose water (*Aqua Rosarum)* were frequently prescribed as corrigents. The Empress used four types of opium preparations: 1. *Tinctura Opii* also called *Tinctura Thebaica*, 2. *Elixir Paregoricum,* a camphorated tincture of opium which consisted of powdered opium, camphora, oil of anise and diluted alcohol, 3. ethanol-based opium *Laudanum liquidum* and 4. *Laudanum liquidum Sydenham* also called *Tinctura Opii crocata*, a tincture of opium and saffron. Nevertheless, she took opium comparatively rarely. Medications containing opium constituted about 10% of prescriptions registered in the Telšiai pharmacy book (Gudienė and Šimaitienė 2014) and, in other prescription books of that time, opium preparations amounted to as much as 15% (Archives 1801-1802). Opium was used in *anodyna*, *expectorantia* (medicines which act upon the pulmonic mucous membrane and increase or alter its secretions), and in *nervina* medication. However, this effective analgesic was included in only 16 (3%) of internal and external medications prescribed for Maria during 1807-1808.

4.2. Components of animal origin

The medications for Empress Maria included six animal materials. Her laxative pills included ox gall *Fel Tauri.* The mouthwash included honey (*Mel).* Several recipes of ointments mentioned white wax *Cera alba.* Whey *Serum Lactis* was prescribed once during 1807-1808, (Archives 1807-1811, list 7, 3 June 1807). Whey mixed in equal parts with "*Vinum Rhenanum*"[4] could be used as a mild purgative and heating medicine. Musk *Moschus orientalis* an odor-enhancing powder was the most expensive animal substance recorded in Maria's recipe book. A single grains or 0,065 grams of it cost 30 kopeks in 1825. Aromatic powder produced for the Empress included 1.5 drachma of *Moschus orientalis.* Inspissated ox gall cost far less than musk, but it was an expensive medicine too. One ounce of it (1 ounce equals 31,1 grams) cost 80 kopeks while the same amount of honey was five times cheaper - 16 kopeks. Bee wax cost 25 kopeks (Aptekarskaja taksa 1826).

One ointment recipe for Maria included *Sperma ceti*, a substance obtained from the head of *Physeter macrocephalus,* the *Spermaceti Whale.*

However, *Castoreum*—a pungent-smelling powder from the castor sacs of beavers that had an effect similar to musk, stimulating the nervous system and commonly prescribed as an antispasmodic for headache, apoplexy, and *hysteria* (Shprengel 1820)—was not prescribed for Empress Maria.

4.3. Chemical compounds

Chemicals were significant in the composition of external drugs and cosmetics prepared for the Empress Maria. They amounted to 30% versus 44% for plant materials and 3% for animal substances. Remaining ingredients consisted of combined medicines and wine, alcohol, sugar, and water.

Four types of water were used for the preparation of Maria's medicines: common water (*Aqua communis)*, boiled water (*Aqua fervida)*, simple water (*Aqua simplicis),* pure water *(Aqua puri).*

Twenty different chemical materials were used. They had different names than today. Inorganic compounds were the most varied.

4.3.1. Inorganic materials

Salts. External medicines, in particular, included a number of inorganic salts: sulfates, nitrates, and carbonates. Most frequently mentioned was *Nitri depurati* (potassium nitrate or saltpeter). This was used to produce clysters. *Vitriolum album* (zinc sulphate) was used for eye wash. *Vitriolum coeruleum* or copper sulphate, also called *Vitriolum cupri* (blue vitriol), was used as an escharotic. Soda (sodium carbonate) was included in mouthwash recipes. For internal use, carbonate of magnesia was prescribed. It had a laxative effect and was used as a component of pills which had to be sprinkled with *Magnes anglicare* (carbonate of magnesia) powder.

An impure potassium carbonate called *Sal Absinthii*, obtained from the ashes of wormwood (*Artemisia absinthium*), was used in mixtures for the digestive tract. Medical literature indicates that *Sal Absinthii* acts as a tonic for the treatment of gastrointestinal and neurological diseases. It also alleviates headaches. High doses irritate the intestines, promoting stimulation (Hager 1887).

During 1807-1808, mercury salt (ammoniated mercury or *Mercurius praecipitatus albus)* was prescribed only once (Archives 1807-1811, list 3, 25 March 1807), although mercury products were particularly popular in the medical practice of that time. Ammoniated Mercury is a powerful preparation, used only as an external application in the form of ointment[5]. It is used to treat chronic cutaneous diseases and to destroy pediculi (Riley 1880).

Alkalis were prescribed for skin diseases. Sometimes an oil liniment of potassium alkali (*Kali causticum*) was produced for the Empress. This is a burning, deep penetrating liquid used in the opening of abscesses and wound searing (Hager 1893). Composition of this medication was as follows: 12 drops of potassium alkali, almond oil and rose water. The liniment was to be applied on the hand.

A more frequently prescribed ointment included hydrate of calcium (*Aqua Calcis).* This is an aqueous solution containing calcium hydrate. Externally it is employed as a wash for *tinea capitis* (fungal disease) and scabies and also for foul and gangrenous ulcers. As a liniment it burns and scalds (The Dispensatory 1889).

Ammonia and its derivatives were prescribed in a few recipes. Some liniments included a compound of two parts alcohol and one part ammonia (*Spiritus salis ammoniaci vinosus*). This was to be rubbed on the skin to improve blood circulation. In some internal medications ammonium salt was mentioned (solution of acetate of ammonia or *Spiritus Mindereri*). This preparation is an aqueous solution of acetate of ammonia, made by saturating dilute acetic acid with carbonate of ammonia. According to medical literature, a solution of acetate of ammonium is a valuable diaphoretic, diuretic and antispasmodic much employed in febrile diseases.

Precipitated sulphur (*Lac Sulfuris*) was prescribed in a laxative recipe. This diaphoretic, resolvent drug also was used to treat chronic skin diseases (Riley 1880).

4.3.2. Organic compounds

The Imperial pharmacy used one organic acid — vinegar — in preparing medicines. The vinegar prescribed had different names depending from which material it had been distilled and at what strength: *Acetum destillatum*; *Acidum aceticum dilutum*, *Acetum*

4 The Rhine wine matured in Germany was used in the prescriptions perhaps because doctors trained in Germany valued the product.

5 Ointment of ammoniated mercury is prepared by mixing one part of white precipitate with twelve of simple ointment.

radicale; *Acetum Vini destillatum*. Dilute acetic acid was prepared by mixing one part of acetic acid with seven parts of distilled water. *Acetum Vini destillatum* was included in the composition of eye lotion. In the early nineteenth century, a few other organic acids were known but they were rarely applied in medical practice. Another organic compound mentioned in Maria's book of recipes was tartar and its compounds. Acid tartrate of potash (*Cremor Tartari)* was prescribed in several laxative rhubarb mixtures. Acid tartrate of potash exists in solutions of grape-juice, and in other acidulous vegetable juices. During vinous fermentation it is deposited on the sides or bottom of the vessel containing the liquor, and in this state is known as "*crude Tartar*", or "*argol*" (Riley 1880). The substance has laxative and diuretic properties.

One more tartar compound ─ *Sal Tartari* was used to prepare a mixture for the digestive tract. The mixture included seven components, two of which were organic salts: *Sal Tartari* mentioned above and *Vinum antimoniale Huxham* (syn. *Vinum stibiatum*). *Sal Tartari* (Archives 1807-1811, list 7, 17 June 1807) or *Acidum tartaricum*, *Sal essentiale Tartari* can cause fatal gastro-intestinal inflammation. *Vinum antimoniale Huxham* (syn. *Vinum stibiatum*) or wine of antimony is prepared by dissolving *Tartrate of Antimony and Potassa* in wine. Depending on dosage, wine of antimony could be an expectorant or diaphoretic, an emetic, or a laxative. This drug was not considered dangerous and, indeed, often was prescribed as an emetic for children. It is likely that such a mixture was used as a laxative for the Empress Maria. In June 1807 the doctors gave her a lot of drugs for gastrointestinal disorders. Along with other medicines, these included wine of antimony (Archives 1807-1811, list 7, 17 June 1807)

Ether. Chemical drugs were ussually employed externally, but there was one organic chemical substance which the Empress repeatedly used internally ─ ether. As a sedative before bedtime the Empress used *Liquor anodynus*, a mixture of spirit and ether, also called *Liquor anodynus Hoffmanni*, *guttae Hoffmanni.* Long-term use of ether could lead to addiction.

Besides spirit of ether, in the list of drugs were ether compounds. *Aether vitriol (Aether sulfuricus*) was mentioned as the component of external medications. *Spiritus Nitri dulcis* (Spirit of nitrous ether) is a solution of nitrous ether in spirit and extensively employed in febrile afflictions.

Usually chemical compounds were prescribed for Maria in small doses, but they still could cause undesirable side reactions. For example, the solution prescribed for "eye wash" with zinc sulfate, diluted vinegar and alcohol could irritate the eye mucosa. Eye diseases are generally treated with aqueous solutions. Potash, mercury salts and boric acid are toxic and the use of ether is addictive. Such therapy could relieve disease symptoms but also could provoke new diseases.

5. Medical treatment

Although the recipes in Maria's prescription book partially revealed her health problems, it is difficult to identify specific diseases. Empress Maria's doctors were influenced by humoral medical theory. The followers of this doctrine interpreted various ailments as the imbalance of humors. Thus, they might prescribe vomit-inducing drugs for ocular inflammation and treat fevers with various laxatives. Instructions for usage in Maria's prescription book provide more clues to her diseases ─ for example a lotion to be applied to the eyes or to the arm. Sometimes the dose and time for application was indicated, allowing us to further hypothesize as to her ailments.

Our analysis of the medications prescribed for the Empress leads to the conclusion that this 48-49 year-old-widow, who had given birth to ten children, was not in poor health. Although many more drugs were prescribed for her in 1808 than in 1807 and despite the fact that she received some medications almost every day, it cannot be concluded that during this period she was critically ill. The abundance of prescriptions illustrates doctors' efforts to demonstrate concern for her rather than that she was in ill health. Since doctors rarely prescribed opium we can conclude that there was no need to relieve pain from a severe chronic disease, such as arthritis or gout. On the other hand, physicians might have avoided this medicine because opium causes constipation and the Empress constantly received laxatives. However, other *narcotica* (powerful anodyne hypnotics) and *anodyna* (medicines used to allay pain) were not prescribed either. Other prescription books from the beginning of the nineteenth century reveal that doctors prescribed painkillers derived from such plants as hemlock (*Cicuta),* henbane (*Hyoscyamus)*, lettuce (*Lactuca),* belladonna *(Atropa belladonna)* (Archives 1801-1802). Since these plants, belonging to the *cardiaca*, are not mentioned in Maria's recipe book we can assume that her doctors did not think that she had a cardiac malfunction. Nevertheless, it is possible that she had hypertension. This disease often prevails in multiparous women, people with obesity or people with deep emotional tribulations (mood swings). Empress Maria had given birth to many children and she suffered from emotional distress. She probably had a cataract; that could have been a consequence of hypertension. In the first half of the nineteenth century, hypertension was not considered to be a disease. Therefore, Maria's doctors interpreted her symptoms differently. They could have relieved her symptoms by bloodletting. Doctor Crichton bled Maria just before her death so we can hypothesize that he used this treatment earlier. Indeed, bloodletting was a popular method of treatment for followers of humoral pathology. This treatment also was used in Russian court medical practice.

Doctor Beck continually prescribed a clyster with nitrate of potassium (*Nitrum depuratum*, syn. *Potassii Nitras*). The salt was dissolved in rose water, which had not only a pleasant smell but also astringent and refrigerant properties. This drug accounted for 16% of all medicines produced in the court pharmacy and was made three to five times a month. About 400 milliliters of this solution were provided. Unfortunately, a notation in German remark "*zur benuzung*" (to use), does not explain its purpose. It is possible that this solution was for purgative clysters. Enema was used for a variety of ailments, however it is hypothised that Maria was treated for constipation or gastrointestinal diseases. "Clysters with nitri relieve the spasmodical affections in the stomach". This clyster usually was made every week. Sometimes it was made as often as every two days but, on the other hand, sometimes it was made every two weeks only.

5.1. Gastrointestinal disorders

We can deduce that Maria's main ailments were gastrointestinal, since internal medicines amounted to 56% of her prescriptions during 1807 and 1808 and many were *stomachic* medicines or stimulants to the stomach (*Caryophyllus*, *Mentha*, *Quassia*, *Radix Columbo*, *Rosmarinus officinalis*, *Vinum*, *Elixir viscerale Hoffmanni).* Maria also took *laxantia* or mild purgatives (*Tartaris potassae, Mineralia: Sulfur, Magnesia*). *Carminatives*─medicines to excite intestinal peristalsis and provoke an expulsion of flatus (*Coriandrum*, *Magnesia*, *Spiritus nitri dulcis*). Further, she took *purgantia* ─ medicines to produce watery discharges from the bowels (*Rheum, Sambucus, Serum lactis, Vinum, Acidum aceticum, Tartarus potassae)* (Shprengel 1820). The laxatives might have been prescribed to cure other illnesses in line with humoral theories, but their constant use indicates actual constipation problems. This ailment was common to the nobility. High-fat food and little movement caused such disorders. For this problem the indispensable remedy, an infusion of rhubarb root powder, was regularly prescribed for the Empress.

From 1657 through the 18th century the government of the Russian Empire had a rhubarb trade monopoly. Private sales of this plant were banned off and on during this period. Those who ignored this requirement could be imprisoned or even sentenced to death. Free trade was allowed in the beginning of the 18th century but the monopoly was renewed from 1736 to 1781, regulating trade from "China via the Asian steppes to Moscow and St. Petersburg, where its root was shipped to the rest of Europe." Rhubarb root was valued for its purgative effect because it was milder than other purgatives. Rhubarb root was also administered as a cure for jaundice and for various skin complaints, was used to fight fever, and was lauded for its astringent qualities (Clifford 1992).

Drugs including rhubarb root powder were generally similar in composition and were prescribed every few days to use at bedtime.

During 1807 and 1808 this remedy was prescribed 78 times. Composition of the remedy was as follows: rhubarb root powder *Pulvis Radix Rhei* with a certain amount (*quantum satis*) of boiled water *Aqua Fervidis*, cooled and drained. Then two more components were added to this infusion: peppermint water *Aq. Menthae piperitae* (2 drachmas, that is 7.8 grams) and from 10 to 14 drops of spirituous ether *Liquor anodynus*. Normally Empress Maria received 5 - 10 grans (0.32 - 0.65 grams) of rhubarb root powder. Current medical literature allows 5 to 12 grans (Hill 1751).

Doctor Beck usually prescribed this laxative. Doctor Crichton prescribed stronger laxatives, such as a mixture of rhubarb root powder (10 grans or 0.65 grams), *Cremor tartari* (25 grans or 1.62 grams) and cinnamon water. *Cremor tartari* or tartar potassium salt was often given with laxatives before bedtime (Hill 1751). During 1807 and 1808 a recipe like the following was prescribed 23 times: rhubarb mixtures with additives of ipecac powder, potassium nitrate derived from wormwood herb ash (*Sal Absinthii*), and occasionally an opium tincture. These medications usually were flavored with mint water, which also affected the digestive tract.

Besides these mixtures, the Empress Maria took laxative pills. During 1807 and 1808, 20 identical recipes of such pills were prescribed. For each prescription, the pharmacist produced 10 pills. This means that over two years the Empress received 200 laxative pills. Ten pills contained 10 grans (0.65 grams) of animal laxative ─condensed ox bile (*Fel Tauri)*, as well as rhubarb root powder and balsam of Peru (*Balsamum peruvianum).* This balsam was a warm stimulating stomachic and expectorant (also recommended in chronic catarrhs) (Hager 1892). Finally, the pharmacist sprinkled the pills with laxative magnesium carbonate powder called *Magnes Anglicare* (Archives 1807-1811, list 2, 22 January 1807).

Constant use of medicines with rhubarb root powder would not produce the desired effect if the individual developed immunity to the medicine. Apparently, this is why Maria's doctors sought additional ways to solve her intestinal ailments. They prescribed complex medications, for example, *Tinctura stomachicum, Elixir viscerale Hoffmanni* (Archives 1807-1811, list 8, 18 June1807).

Sometimes prescriptions indicated the use of two tablespoons of an herbal mixture an hour and a half before dinner or at seven o'clock in the evening. This mixture consisted of *Radix Columbae* (the root of *Jateorhiza calumba*), *Semen Coriandri* (the fruit of Coriandrum*)* and *Aqua Menthae piperitae*. *Radix Columbae* is generally soothing to the stomach; it often is prescribed for dysentery, diarrhoea, and cholera.

The Empress commonly received a laxative at bedtime and sometimes it was strong acting. For example, precipitated sulphur *(Lac Sulfuris),* powder of jalap *(Pulvis Radix Jalapae)*, mucilage of gum arabic (*Mucilago Gummi arabici)*, peppermint water (*Aqua Menthae piperitae*) and a composite medication *Tinctura aromatica. Tinctura aromatica* consisted of *Corticis cinnamomi cassiae, Fructus cardamomi, Rhizoma zingiberis, Rhizoma galangae, Spiritus vini dilute* (Hager 1892).

Sometimes laxatives were accompanied by opium but more usually Maria's doctors prescribed digestive tract mixtures made of *Radix Rheum* and *Radix Columbae* to use with spirit of ether (*Liquor anodynus:* 10 to 14 drops). Spirit of ether was beneficial for nervousness and insomnia (The Dispensatory 1889). It is not surprising that Maria, who was little active physically but beset by emotional tribulations, suffered from anxiety and insomnia.

Whereas other nineteenth-century prescription books reveal that external medications accounted for about 24% of all prescriptions (Gudienė and Šimaitienė 2014), external preparations for Empress Maria (ointments, solutions, liquids for rinsing, eyewash) amounted to nearly twice that amount because, in addition to gastrointestinal disorders, she suffered from skin diseases. The two ailments probably were related.

5.2. Skin diseases

Prescriptions against herpes indicated that Empress Maria may have been plagued by *pityriasis* or *psoriasis*. At the end of 1807, a sheet of paper was inserted into her recipe book with the pharmacist's comments on some recipes for the Empress. These included a recipe for a lotion called, in Russian ''*primochka*'' and two recipes for ointments with the Russian postscript *"Sostavlenaja maz dlia lishai*'' (''*мазь*'')─a salve for the face.

As noted, Doctor Einbrodl apparently healed Maria's dermatological eruptions in the spring and summer of 1807. However, skin diseases may have intensified at the end of the year. In November 1807, for the first time, an ointment with potassium alkali was prescribed. Treatment with this medicine lasted four months, from November through February 1808. The ointment was to be applied to the arm (''*pour frotter sur le bras*''). In January and March of 1808 another dermatological ointment, containing copper sulphate and calcium hydroxide (*Aqua Calcis*), was prescribed. After a hiatus the medicine was prescribed in June and July. During that time, doctor Rühl prescribed ten identical recipes with the indication ''*Zum ausserlich gebrauch*'' ─for external use (Archives 1807-1811, list 25, 29 June 1808).

In July of 1808, a new composite medicine, *Balsam cosmetici*, containing rose water and a lavender alcoholic solution was prescribed in addition to a copper sulfate ointment. The Empress was treated with this medicine until the end of the year. Sometimes *spiritus* or *aqua cosmetici* was prescribed instead of *Balsam Cosmetici*.

Aqua cosmetica lotion is prepared by mixing almonds, rose and orange waters and soda. This medicine is used externally to treat acne and other similar diseases.

Besides the dermatological drugs, medications for eye diseases were prescribed.

5.3. Ophthalmic drugs

At the age of 66, the Empress Maria had poor eyesight, which she complained about in her letters. The cause of her deteriorating eyesight could have been a cataract. Cataract removal surgery was described in 1753 in a French journal. However, this difficult procedure was not being used in the beginning of the 19th century in Russia when Empress Maria was suffering from eye diseases.

Almost monthly during 1807 and 1808 eleven medications for eye wash were prescribed. Doctor Crichton ordered chemicals: sulphate of zinc ─ *Vitriolum album* (this is used in solutions as a collyrium in chronic ophthalmia) and acetate of lead ─ *Saccharum Saturni,* syn. *Plumbi Aceticum* (an external application that is used for most forms of superficial inflammation and is also beneficial for cutaneous eruptions ''attended with surrounding inflammation, or accompanied by itching or heat'').

These drugs were intended for cleansing the eyelids. However, in addition to the active substances, they contained alcohol and vinegar, substances that could irritate the eyeball. Solutions of *Sacchari Saturni* and *Vitrioli albi* (3 grans of each), *Aceti Vini destiliati* (2 drachmas), *Spiritus vini gallici* (1 drachma) indicated that Maria suffered from eye diseases. A French notation was added to this recipe by the pharmacist: ''*Pour Baigner les Yeux*'' ─ for bathing the eyes (Archives 1807-1811, list 35, 8 December 1808).

5.4. Treatment for Colds

It is likely that in the end of 1808 and at the beginning of the next year the Empress Maria had a fever, sore throat and cough. Seven times from 1-9 December and for five days from 21-26 January the pharmacist prepared a drug for her which consisted of *Mucilago Gummi arabici*─ Mucilage of gum arabic (3 drachmas - 11,65 grams), *Syrupi Papaveri*─syrup of papaver (3 drachmas), *Elix. Paregorici*─ paregoric elixir (2 drachmas - 7, 8 grams), *Aqua Melissae* ─ melissa water (2 ounce - 62 grams), and *Aqua simplici*─ordinary water (4 ounce - 124, 40 grams) (Archives 1807-1811, list 34, 1 December 1808). *Elix. Paregoricum* contained two times less opium than tinctures of opium, so it was not given in drops, but in larger quantities ─ a half of drachma or even one or two drachmas. The pharmacist prepared about 200 milliliters of this medication and the doctor indicated that one tablespoon of it be taken occasionally (''*pour en prendre une Cuillère a Table occasionnellement*''). Probably the disease returned in January, because the Empress was instructed to take one tablespoon of this medicine every three hours. The medication included syrup of poppies to allay cough, quiet restlessness,

to relieve pain and to promote sleep (The Dispensatory 1889). At the same time a medication was prescribed to rinse her mouth and a drug with camphor to apply to the chest. These drugs were used to suppress cough, rinse the throat, and to warm the chest against phlegm. This therapy differed from those previously prescribed, which also treated the respiratory tract and fever.

The Empress was rather ill in May 1807. In addition to the usual laxatives with rhubarb and other ingredients, Crichton treated her for an apparent fever. On 3 May, three drugs were appointed: warming ointment with camphor to rub her back and two mixtures. The first was to reduce fever as it stimulated sweating and relieved pain. The mixture included *Spiritus Mindereri*─Spirit of Mindererus (Solution of acetate of ammonium ─ a valuable diaphoretic, much employed in febrile diseases), *Elixir Paregoric* (camphorated tincture of opium), *Spiritus nitri dulcis* (spirit of nitrous ether) and *Aqua Melissa*. It was recommended that the Empress drink this mixture in the evening before going to bed or during the night ("*pour prendre ce Soir à l'heure du Coucher on dans la nuit*") (Archives 1807-1811, list 5, 1807 May 13). The pharmacist produced this mixture two more times that May.

In March 1808 the Empress was ill again. Thirty-nine drugs ─ far more than in other months were prescribed for her. Four doctors treated the Empress that month. Doctor Crichton prescribed almost daily (12 prescriptions during 15 days), giving her a demulcent Althea root infusion and also an infusion of elder flowers (a gentle excitant and sudorific). He recommended that she take one tablespoon of this medication frequently.

At the same time, mouth rinses were prescribed for the Empress. These medications might have been prescribed to treat a cold and sore throat; they also were effective for oral mucosa rashes.

Maria's doctors prescribed several mouthwashes, sometimes indicating how to use them: "*gargarissme*" ─ to gargle, "*rincer*" ─ to rinse, "*laver*"─ to wash the mouth ("*pour rincer la Bouche*, *Lotion pour laver la Bouche*").

All these drugs included honey of rose (*Mel Rosarum*), made the following way: water was poured on rose flowers and after a few days this extract was boiled down, then diluted wine spirit was added and, after filtration, some honey was added. Honey of Rose was used as an adjunct to detergents and astringents (Hager 1893). Mouth rinses varied. Four included only rose honey. One included opium ─ *Infusum flores Sambuci*, *Laudanum liquidum Sydenham*, *Mell rosare* (List 19, 28 March 1808). Doctor Crichton prescribed a lotion with borax powder (*Boracis pulve*) dissolved in a rose water (Archives 1807-1811, list 17, 3 March 1808) and another time with soda. These drugs addressed inflammation, sore throat, stomatitis, or simply bad breath.

5.5. Neuralgic pains

On 16 March 1807 Doctor Crichton prescribed Queen of Hungary water ─*Aqua Reginae Hungariae* (syn. *Spiritus Rosmarini compositus*) ─ for Empress Maria (Archives 1807-1811, list 3, 16 March 1807). This is the world's first alcoholic perfume. It included 60 parts of *Spiritus Rosmarini* and 20 parts each of *Siritus Lavandulae* and *Spiritus Salviae* (Hager 1893). This liquid also had medicinal properties. It acted as astringent and spirituous foundation to disinfect and tone up the skin. The same day the doctor prescribed three preparations: the first consisted of about 30 grams of Hoffmann drops (compound spirit of ether), the second was a camphor and vinegar solution and the third was Queen of Hungary water.

It seems that the doctor used all these components to lubricate areas affected by neuralgic pain because on 21 May, 1808 the same doctor prescribed similar components and similar doses of an ointment to apply to the chest: *Linimentum Comphorati*, *Tinctura Thebaicae* (tictura opii), *Liquor anodyni*, *Balsamum Vitae Hoffmanni*[6], *Aqua Reginae Hungariae* (Archives 1807-1811, list 23, 21 May 1808).

6 Composition: *Oleum Lavandulae*, *Oleum Caryophyllorum*, *Oleum Cinnamomi Cassiae*, *Oleum Thymi*, *Oleum Citri*, *Oleum Maidis*, *Oleum Auranti florum*, *Balsami Peruviani*, *Spiritus vini*.

6. Perfumes

The Imperial pharmacy produced and dispensed not only medications, but also cosmetics and perfumes. At the beginning of January 1808 the pharmacist prepared a powder from aromatic substances and remarked that it was to be put into an aromatic bag: "*pulveres pro Sacculo odorare*". The powder was made of oriental musk (*Moschus orientalis*) ground with sugar and to this was added powder of Iris Florentina (*Pulvis Iris flor*[7]) and powdered Almond, Oil of bergamot (*Oleum Bergamottae*[8]), oil of neroli (*Oleum Neroli*[9]), and *Balsamum Vitae Hoffmanni* (Archives 1807-1811, list 15, 9 January 1808). Since no doctor was specified, it is likely that the pharmacist produced the aromatic powder without a doctor's prescription. The aromatic silk bags were kept in handbags, rooms or sewed into dress linings because at the time, even in the highest social class, people rarely took baths and paid little attention to hygiene, so unpleasant odors were masked with perfume.

Another perfume recipe with the notes "*pour mettre dans un sac*" "to put the herbs in a bag" was described in Maria's prescription book 29 April 1808. On that date, Doctor Crichton prescribed a powdered mixture of chamomile flowers with medical herbs of *Artemisia abrotanum* (southernwood), *Herba abrotanum*, medical herb *Artemisia absinthium* (Wormwood), *Herba Absinthium* and mixture of aromatic herbs *Species cephalicae.*[10]

7. Hard period – the spring of 1808

The most difficult period for the Empress Maria was the spring of 1808. Doctors gave her a great number of drugs─39 in March, 31 in April, and 54 in May. As previously described, colds and skin diseases had probably intensified in March. Mouthwashes and lotions for the eyes were prescribed. At the end of the month Crichton prescribed a higher than usual dose of ether drops with aromatic waters and sugar and instructed Maria to drink two tablespoons immediately before and one and a half hours after dinner (Archives 1807-1811, list 19, 30 March 1808). It could be that because of weak immunity, oral mucosal lesions and stomatitis occurred because doctors prescribed a mouth rinse with boric acid and *Globuli Martiale* ─ a medicine with iron tartrate used to treat anemia and weakness (Hager 1892). Perhaps this physical disability agitated the Empress; hence the higher than usual amount of ether drops. In April this nerve calming mixture was prescribed six times. On 23 April the sedative valerian tincture was also prescribed.

Soon after Empress Maria suffered great psychological distress. Around 20 April the little Princess Elizabeth fell ill and after ten days, 30 April, she died. During this time, Crichton prescribed sedatives with ether for Maria while Beck prescribed laxatives with rhubarb and drops of ether. Crichton also prescribed mouthwashes, aromatic powder in a bag and a warming liquid to apply to the skin. While the little princess was ill, Maria apparently forgot about her own problems. Doctors prescribed relatively few medicines for her. However, after the death of Elizabeth, the Empress was overwhelmed with grief and the doctors tried to help her and the entire imperial family. In May, doctors Crichton, Rühl and Beck prescribed more medications than ever before ─ and, in addition to Maria's regular therapy of laxatives and external solutions, new drugs entered the treatment. Crichton prescribed sedatives and appetite-enhancing and urine and sweat-inducing drugs. On the day of the princess's death Doctor Crichton prescribed for the Empress *stomatica* and a sweating stimulating, diuretic and soothing mixture of seven components including ether drops He also prescribed *Aether vitrioli* for calming her nerves and inducing sleep. The doctor ordered her to take 15 drops

7 The rhizome and rootlets of Iris Florentina were used.

8 *Citrus Bergamia Risso* – the orange (*Aurantiaceae*) family plant from Southern Europe and West Indies. The oil is obtained by pressing the fresh plant peels. It is used only for production of perfume.

9 *Oleum Aurantii florum, Oleum florum Naphae, Oleum Neroli* - orange blossom oil. It is a fragrant oil used in perfumery only.

10 *Species aromaticae*. Composition: *Folium Lavandulae*, *Foliorum Menthae piperitae*, *Foliorum Rosmarini*, *Herba Majoranae, Herba Serpylii, Caryophyllorum, Fructus Cubebarum.*

of this medication before bedtime, insuring that there was enough of the preparation for a few days.

The first day of May doctors Crichton and Beck prescribed four drugs. As usual, Beck prescribed laxatives with rhubarb and a clyster. Crichton continued eye therapy and also repeated the seven-component mixture prescribed the day the princess died. Thus, that day Empress Maria imbibed an exceptionally high amount of ether drops. Every two hours she drank the mixture of ether drops. In the evening she received the laxative mixture with 12 drops of ether and, finally, she took 15 drops of *Aether vitrioli* before bedtime.

The next day, 2 May, four recipes were registered in the book. Doctor Beck prescribed the usual laxative pills, Crichton continued the eye and ether therapies and for the first time gave the Empress Cardamone ─ a fruit tincture in the *amare* group of bitter medicines that improves appetite and digestion. It is likely that the Empress had lost her appetite and her weakened state intensified her neuralgic pains.

On 12 May 1808 a pill recipe of 10 ingredients was registered in the book. This complex compound that had diverse effects had not been prescribed before. Interestingly, only four pills were prescribed and the doctor's name was not specified. The pills affected mucous secretion (*mucilaginosa*). The components included *Pasta Althaeae*, *Pasta Liquiritiae*, two ether ingredients─*Aether vini* and *Liquor anodyni*, two galenical preparations with peppermint ─*Aq. Menthae piperitae* and *Rotulae Menthae piperitae*, laxative magnesium carbonate powder, tonic vinegar, tonic tincture, and sugar. Perhaps Maria's respiratory disorder of March had recurred, necessitating expectorant drugs. In any case, this was the first time that her prescription book referred to *Essentia Myrrhae, Pasta Althaeae* and *Pasta Liquiritiae.* A few mouthwashes recipes were registered in the book and it appears that Maria suffered from neuralgic pains. For the first time Doctor Rühl gave her a medicine for neuralgic pain relief and ordered her "to apply it to the hand". This drug had two ingredients: an alcohol liquid and ether (*Aether vitrioli*), and Spirit of Ammonia (*Spiritus salis ammoniaci*) Crichton prescribed a similar ointment, indicating that she should "apply it to her side".

In addition to medicines to assuage Maria's anguish from her granddaughter's illness and death, doctors prescribed aromatic substances. Doctor Crichton directed that perfume *Aqua Reginae Hungariae* be put into the neuralgic ointment. The day before the princess died he prescribed aromatic powder, which could be sewed into the robe of the agitated Empress.

A month after the princess's death Maria's health improved. Only half as many medications were prescribed and the doses of ether were reduced.

8. General survey

Portraits of Empress Maria depict a beautiful, slender woman. This unique source─her prescription book of medicines and perfumes─reveals that she suffered from skin, eye and gastrointestinal diseases. Perhaps artists disguised the effects of her medical problems.

Maria's recurrent skin rashes and itching imply that she had herpes. The doctors called it "lishaja" in Russian. However, it is possible that they used this name for psoriasis, seborrhoea or another skin disease. Similarly, in 1809 doctor Johann Peter Frank diagnosed herpes for Napoleon (then allied with Tsar Alexander I) and suggested that no ointments should be applied except distilled vinegar, which he considered the only effective medicine for this problem (Frankas 2001). The physicians who treated Empress Maria, however, prescribed vinegar only rarely. It seems that sometimes the Empress had purulent facial sores which might have been acne and also furuncles and carbuncles on her arms. For these her doctors prescribed an ointment with a harsh chemical compound─potassium hydroxide. It helped to open up and cauterize purulent sores.

However, the very popular mercury ointment for skin diseases was prescribed only once during 1807 and 1808 and *Emplastrum Vesicatorium* as well as other popular therapies were not prescribed for Empress Maria, as noted.

Since mercury treatments were not prescribed for Empress Maria, the myth that her skin problems resulted from syphilis─an illness unfortunately common to the aristocracy of that time─must be rejected. Besides, a patient suffering from syphilis would not live for 69 years.

Eye diseases did apparently torment Empress Maria. Her doctors' prescriptions, however, are difficult to explain. Compounds for "rinsing the eyes" included medicinal products usual for chronic ophthalmic diseases─zinc sulfate (*Vitriolum album*) and acetate of lead (*Saccharum Saturni).* But these components were prescribed along with vinegar and diluted spirit which could iritate the eye mucosa. These medicines used to clean eyelids or for "steaming the eyes" instructed that a few drops of the liquid be put on the hands which then were to be held near the eyes. In 1809 a new ophthalmic drug containing mercury salts was prescribed for the Empress. This could have been the way that Maria's doctor treated her deteriorating eyesight—which could have been caused by a cataract.

Skin diseases produce irritation and itching. This plus her gastrointestinal problems and the loss of her granddaughter led to many prescriptions for ether. However, opium was used rarely. Opium *Paregoric* relieves pain and inhibits cough centers. The use of opium with components to reduce the temperature and promoting sweating and expectorants, suggests that opium was prescribed for Maria to cure respiratory tract diseases. At the same time her doctors prescribed mouthwashes and warming ointments containing camphor to improve blood flow and reduce symptoms.

Admittedly, doctors did prescribe large amounts of laxative mixtures with rhubarb root powder and laxative pills with condensed ox gall. It is likely that the doctors thought that these medications would not only treat her gastrointestinal ailments but also would act as cleansing agents, and according to the doctrine of humoral pathology, benefit her skin and eye diseases. Maria's laxatives and other internal medicines usually included vegetable materials. Occasionally chemicals such as sulfur or tartrate were prescribed but emetics (materials which cause vomiting) such as antimony wine, ipecac drops, and tartrate were rarely prescribed with her laxatives.

Of course the royal pharmacy had the richest assortment of medicinal raw materials. And the Empress was treated only with the most expensive plants brought from India, China, the Mediterranean, as well as African and American continents. Some of these exotic herbal medicines were rarely mentioned or not mentioned at all in prescription books of town pharmacies. The doctors prescribed medicines for Empress Maria consisting of components from 35 different plants, 20 chemicals and 6 materials of animal origin. Pharmacies for ordinary people often used popular materials like tamarind, whey, marshmellow (*Althea)*, and elder but these were rarely prescribed for Empress Maria. Special attention was given to making her medicines as pleasant as possible. It is not surprising that such substances as almond oil, spirituous lavender solution and mint water were constantly used as *corrigens.* The Empress doctors avoided drugs which could cause discomfort such as vomiting. Chemicals for internal use were prescribed with caution. Maria's doctors strictly followed recommended doses and usually prescribed a dose lower than the maximum. In addition to pharmacological therapy, bloodletting was popular in the early nineteenth century but no references to this practice are in Maria's recipe book .

Despite the fact that the Empress received a small amount of potent drugs such as mercury, antimony compounds, opium and others, her medicines could have been detrimental to her health. Long-term use of seemingly innocuous medicines such as rhubarb root extract could cause constipation or even provoke cancer and ether drops could lead to addiction. Abundance of chemical drugs used for the treatment of skin diseases also could have had negative side effects. Afraid to experiment, however, her physicians eschewed new therapies. Nevertheless, despite her illnesses and possible damage from aggressive medications, Empress Maria lived another 20 years and died at the age of 69.

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